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3-1-2010

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USING VIRTUAL WORLD LEARNING ENVIRONMENT AS A COURSE COMPONENT IN BOTH DISTANCE LEARNING AND TRADITIONAL CLASSROOM: IMPLICATIONS FOR TECHNOLOGY CHOICE IN COURSE DELIVERY

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ABSTRACT

This study examines and compares social presence perceived in a virtual world environment and students' learning satisfaction in distance learning and traditional classroom settings. Our findings indicate that social presence is related to students' learning satisfaction in both settings. The comparative analysis shows no significant difference between two classes in perceived social presence and overall learning experience. The results suggest that learning satisfaction is related with a variety of technologies used in the course delivery.

Keywords

Virtual World, Technology-mediated Learning, Second Life, Social Presence, Learning Satisfaction

INTRODUCTION

Three-dimensional (3-D) immersive virtual worlds are an emerging technology currently being used as education and research environments for academics (Harris, Lowendahl, and Zastrocky, 2007; NMC, 2008). Virtual worlds provide a unique environment and set of tools which students who have grown up using Information Communication Technology may find relevant and appealing. Theoretically Virtual worlds are "of particular pedagogical relevance because in such environments students are prone to explore, participate, discover new knowledge, and develop industry relevant skills with greater intrinsic motivation and autonomy" (Dreher et al. 2009, p. 212).

Second Life, a virtual world example, has been used and studied in both traditional classroom and distance learning. It was found that the integration of Second Life activities enhanced student learning satisfaction. Students considered the virtual world experience to be unique and interesting, however, problems of the use of Second Life are also reported (Shen and Eder, 2009; Wagner and Ip, 2009; Wang and Braman, 2009; Zhang and Zigurs, 2009).

We explored the role of virtual worlds in student interaction and learning satisfaction in an actual distance learning class (Zhang and Zigurs, 2009). We found that perceived social presence was correlated with perceived interaction, and the interaction was correlated with learning satisfaction. However, majority of the students reported their dissatisfaction with Second life. The reported difficulties encountered by students may have been strengthened by the nature of completely online courses where in-class training session is not available and students become frustrated with the technology. To further examine this phenomenon, this study intends to investigate the impact of learning settings on student perceptions of social presence and learning satisfaction by using Second Life in both traditional and distance learning classes.

Social Presence and Learning Satisfaction

In a learning context, social presence is defined as student perceptions of being in and belonging in an online course (Picciano 2002). In Tu and McIsaac (2002) study of the relationship of social presence and interaction in online classes, social presence was described as the degree of feeling, perception, and reaction of being connected by Computer-mediated Communication to another intellectual entity through a text-based encounter" (p. 140). In technology-mediated learning research, studies have been conducted extensively to examine social presence and its relationship to learner satisfaction and learning outcomes.

Recent researches continued to study social presence and student learning experience with an emphasis on online courses. Cobb (2009) assessed social presence in online learning and found that students are satisfied with their experience in online courses. Homer, Plass, and Blake (2008) studied the general findings of the body of social presence research and learning. They found that when social presence is increased by the way of information is presented, learning process is perceived more engaging and learners remember the information better. These researchers, along with many others, demonstrated that most of the studies found that social presence is a critical factor in learning.

Social presence theory (Short, Williams, and Christie, 1976) views social presence as an attribute of the communication medium. Virtual world learning environments provide a highly social experience with multi-way interactions. A unique feature of virtual world environments is their resemblance of the real context relevant to learning objectives; therefore such environments can provide support for learning and enhance students' learning satisfaction.

RESEARCH METHOD

Data were collected from two classes of the same course – a distance learning class in fall 2008 and a traditional class in fall 2009 at a Midwestern university in the United States. It was an introductory information systems course. 25 students enrolled in distance learning class and 13 out of 14 students who remained active at the end of the semester completed the survey. 58 students enrolled in traditional classroom class and 56 students responded to the survey questions. Table 1 and 2 show the demographic information of both classes.

		Distance Learning (N = 13)	Traditional Classroom (N = 56)
Gender	Male	76.9	92.9
	Female	23.1	7.1
Age	18-20	23.1	69.6
	21-25	38.5	16.1
	26-30	23.1	10.7
	>30	15.3	3.6
Year in School	Freshman	7.7	37.5
	Sophomore	23.1	30.4
	Junior	23.1	17.9
	Senior	23.1	3.6
	Graduate	7.7	3.6
	Other	15.3	7.1

Table 1. Student Demographic Information in Two Classes

	Distance Learning (N = 13)	Traditional Classroom (N = 56)
I have had experience with Second Life or other virtual worlds	15.3	46.4
I have had experience with virtual world games	15.3	53.6
I have had experience with other online games	46.2	67.9
I have NO experience with Second Life or any other virtual worlds	23.1	10.7

Table 2. Student Demographic Information in Two Classes – Online Experience

Procedure

The researcher was the instructor for both classes. A variety of technologies were integrated into the course delivery. Second Life was used for student group project for both classes. The objective of the group project was to let student groups explore the presences of existing businesses in Second Life and investigate their business strategies of

making use of Second Life. Students were helped with tutorials, video links and in-class training session (for classroom section) to start their exploration in Second Life. The project took place over a period of six weeks.

Data Collection and Analysis

A post survey was given online and in class after the term group project for two classes. Responses were then manually entered into and analyzed with SPSS 14.0. The post survey contained demographic questions, Likert-scale questions of social presence and learning satisfaction, and open-ended questions about students' opinions toward Second Life and their overall learning experience.

The social presence scale was adapted from Swan and Shih (2005) with minor modification, such as wording change from "online discussion" to "Second Life project," intending to investigate student perceptions of social presence from this particular learning environment. The learning satisfaction scale has been validated and used in Chou and Liu (2005). The eight questionnaire items were adapted from previously validated scales (Alavi 1994; Compeau and Higgins 1995; Green 1980).

Results

Cronbach's alpha was used to assess the internal consistency of the results across items within two scales. Table 3 and 4 show the reliability analysis results with descriptive statistics for both scales in two classes. Results showed that students perceived social presence in Second Life project to some extent and they were satisfied with learning experience in the course.

Study Construct	Cronbach's Alpha	Min	Max	Scale Range	Mean	Standard Deviation
Social presence	0.620	2.39	4.00	1 to 5	3.22	0.51
Learning satisfaction	0.811	1.69	2.69	1 to 5	2.13	0.28

Table 3. Reliability Analysis and Descriptive Statistics in Distance Learning Class (N = 13)

Study Construct	Cronbach's Alpha	Min	Max	Scale Range	Mean	Standard Deviation
Social presence	0.849	2.00	3.41	1 to 5	2.71	0.63
Learning satisfaction	0.910	1.95	2.50	1 to 5	2.29	0.61

Table 4. Reliability Analysis and Descriptive Statistics in Traditional Class (N = 56)

Pearson's correlations analysis was conducted on social presence and learning satisfaction. Table 5 and 6 show that social presence yielded a correlation of 0.60 and 0.40 with learning satisfaction in distance learning and traditional classes (r^2 = .51 and .32 respectively). The results showed that social presence perceived from Second Life was correlated to students' overall learning satisfaction.

	Class	Learning Satisfaction
Social Presence	Distance Learning	.597 (sig at .05 level)
	Traditional	.400 (sig at .01 level)

Table 5. Nonparametric Correlations Results

Dependent Variable	Predictor	Class	R square	F	Sig.
Learning satisfaction	Social Presence	Distance Learning	0.51	11.358	.006
		Traditional	0.32	25.041	.000

Table 6. Regression Analysis Results

The Wilcoxon-Mann-Whitney test was conducted to investigate the difference between student perceptions and demographic information in two classes. Table 7 shows no difference between gender distribution and online experience between the students in classes. However, the results showed that students in traditional class in this

study are younger, their class rankings are lower and they have more online experience. Nevertheless, there is no significant difference between social presence and learning satisfaction perceived by the students in two classes.

	Age	Gender	Class	Online Experience	Social presence	Learning satisfaction
Mann-Whitney U	169.000	306.000	194.000	210.000	287.000	307.500
Wilcoxon W	1765.000	397.000	1790.000	1806.000	378.000	398.500
Z	-3.037	-1.702	-2.697	-.305	-1.184	-.871
Asymp. Sig. (2-tailed)	.002	.089	.007	.761	.236	.384

Table 7. Comparative Analysis between Distance Learning and Traditional Classes

DISCUSSION

Correlations analysis showed a significant relationship between students' perceived social presence in Second Life and students' perceived learning satisfaction. The comparative analysis results showed that learning settings was not a significant factor of student perceptions of overall learning satisfaction and social presence from virtual world activities. This result indicated that virtual world environment and the learning activities held in it played a bigger role in students' learning experience as compared to whether virtual world training session was offered face to face and instructor's assistance with the technology was instantly available. Learning curve is one of the factors that may affect the use of a technology but it is not a crucial one for virtual world environments.

Qualitative data collected from the students' comments indicated that students related their learning satisfaction with other technologies used in the course delivery. More than half of the students commented that Second Life was a good idea for education but it had room to improve in terms of its clumsy interface design, the demanding system requirement, and its lack of participants on most of the islands. Students usually were not able to find any people to talk with on the business islands. This finding suggests that the integration of various technologies used in the course is important in students' learning satisfaction.

CONCLUSION

Our findings suggest that students' perception of social presence in the web-based virtual world learning environment contributes to their perceived learning satisfaction and so do other individual course activities. Students may not be satisfied with a particular technology adopted in the course delivery but if other learning tasks and technologies are designed and used well, the dissatisfaction does not hinder the overall learning experience.

The limitation of this study was the lack of randomization and manipulation in the study. Both classes in the study consisted of large proportion of male students. As this study used actual classes and the "participants belong to an intact group" (Richardson and Swan 2003), the randomization was beyond the researcher's control which is the characteristic of experimental studies in an educational setting. The study design could have asked students to rate their learning satisfaction for just Second Life activities in addition to the overall learning experience. Social presence may be necessary to achieve high learning satisfaction but it may not be sufficient when other factors exist to reduce learning satisfaction.

The implications of this study extend into both research and practice. Instructors need to be aware of the impact of the technology adopted in the course and social presence or lack thereof may have on students' learning satisfaction. More research needs to be conducted in the area of social presence for different course activities and information technologies used in the course and assessment of learning satisfaction at activity level. Research is needed to determine the criteria of technology choice from both instructor's and students' perspectives. The limited amount of empirical research in the area of virtual world learning environment and the lack of empirical research in social presence related to such environments make this study importance to the literature.

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